Pn junction energy storage

How does the thickness of the p n junction affect energy deposited?

Plot of the amount of energy deposited in the P N junction and the probability of collecting electron-hole pairs generated outside the depletion region,versus different thicknesses of AlN P N junction. According to Fig. 7,the energy deposited in the P N junction increaseswith the increase of the thickness of the P N junction.

How did rectification of p-n junction and photoconductivity affect semiconductor development?

The rectification of the p-n junction and photoconductivity were two important traits that had an impact on semiconductor development. Semiconductors have a tunable bandgap with a wide range between 1.1 eV and 1.7 eV, which allows them to absorb light of specific wavelengths.

How do p n junctions decouple light absorption and catalysis in Pecs?

In the design of appropriate PECs, a key element is effective separation of photogenerated electron-hole pairs. Strategies have evolved that decouple light absorption and catalysis in PECs using semiconductor p-n junctions as light absorbers combined with inorganic catalysts for water splitting 17, 18, 19, 20.

What is the value of p n junction thickness?

According to Fig. 11 (a),(b),and (c),the short circuit current,open circuit voltage,and battery efficiency are the highest when the P N junction thickness is 300 um. In this thickness,the value of short circuit current,open circuit voltage and battery efficiency are about 228.07 nA,2.66 V and 1.38 %,respectively.

Are P-Nio/N-ZnO heterojunctions better than pure semiconductors?

For example,the photocatalytic performance of p-NiO/n-ZnO and p-Cu 2 O/n-ZnO heterojunctions are much betterthan that of pure semiconductor [39,40]. For charge transfer in junctions,the photoinduced charges must overcome the barrier arising from the lattice mismatch at the interface of two semiconductors.

Is p-n homojunction a good photocatalyst?

As a result, p-n homojunction exhibited activity of 3.2-fold and 3.3-fold higher than pure p-ZnO in photodegradation of phenol and as photocathode in photoelectrochemical water splitting, respectively. This work provides a new strategy for the design and fabrication of highly efficient photocatalysts with promoted charge separation.

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